

## Patent Claims

16. (New) A method for monitoring the functioning of sensors which measure and monitor the state parameters of liquids or gases, comprising the steps of:
- placing the sensor in a test state at time intervals;
  - registering test parameters at time intervals or at time intervals during the course of registering measured values;
  - storing the registered test parameters;
  - evaluating a backward-looking chronological development of the stored test parameters in order to perform functional monitoring;
  - predicting from said evaluations the development of sensor behavior to be expected in the future; and
  - obtaining thereby information concerning the duration of the remaining disturbance-free operation of the sensor.
17. (New) The method as defined in claim 16, wherein:
- said evaluation step is conducted using non-linear interpolation methods, in order to obtain a function describing the sensor behavior.
18. (New) The method as defined in claim 16, wherein:
- a function is specified and used for a particular sensor, which reproduces the experience-based sensor behavior.
19. (New) The method as defined in claim 18, wherein:
- the function involves a polynomial function.
20. (New) The method as defined in claim 16, wherein:
- a first predictive value is determined for the wear limit.
21. (New) The method as defined in claim 16, further comprising the step of:
- testing whether the wear limit of the sensor will be reached before the next registering of test parameters.
22. (New) The method as defined in claim 16, further comprising the step of:
- testing whether a predictively obtained value of the text parameter lies within a warning range this side of the wear limit as defined at this time.

23. (New) The method as defined in claim 16, further comprising the step of:  
determining and issuing and/or displaying, and where necessary, initiating  
measures for maintenance on the basis of the information concerning the duration of  
the remaining, disturbance-free operation.

24. (New) The method as defined in claim 16, further comprising the step of:  
determining and, where appropriate, issuing a predictive point in time for  
replacement of the sensor on the basis of the information concerning the duration of the  
remaining, disturbance-free operation.

25. (New) The method as defined in claim 16, wherein:  
as a test parameter, the slope of the sensor signal, or signals, in a particular test  
state of the sensor is registered and evaluated.

26. (New) The method as defined in claim 16, wherein:  
as a test parameter, the zero point of the sensor signal, or signals, in a particular  
test state of the sensor is registered and evaluated.

27. (New) The method as defined in claim 16, wherein:  
as a test parameter, the internal resistance of an electrode is registered and  
evaluated.

28. (New) The method as defined in claim 16, wherein:  
as a test parameter, the change of the dynamic behavior of signals produced by  
the sensor itself is registered and evaluated.

29. (New) The method as defined in claim 16, wherein:  
a plurality of different test parameters are registered and evaluated.

30. (New) The method as defined in claim 16, further comprising the step of:  
obtaining a sensor specific, basic data from a storage arrangement of the sensor  
or the measured value transmitter over the internet or over update media, for the  
evaluation.